

Appl. No.: 09/675,530
Amdt. dated April 14, 2004
Reply to Office action of February 20, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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1. (Currently amended) A computer system, comprising:
a biometric device configured to transmit images;
an interface coupled to the device to receive the transmitted images,
(wherein the interface is configured to compare subsequent images
and determine if the subsequent images ~~the transmitted images~~
include ~~non-stationary~~ bands that differ positionally.
 2. (Currently amended) The computer system of claim 1, wherein the interface is configured to report failure if the interface determines that the transmitted subsequent images include ~~non-stationary~~ bands that differ positionally.
 3. (Original) The computer system of claim 1, wherein the bands are attributable to illumination changes.
 4. (Original) The computer system of claim 1, wherein the bands are attributable to electrical changes.
 5. (Original) The computer system of claim 1, wherein the bands are attributable to induction across the biometric device.
 6. (Original) The computer system of claim 1, wherein the interface is configured to process the images to determine minutia information.

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7. (Previously presented) The computer system of claim 6, wherein the interface is configured to convert the minutia information into a template only if the interface does not determine that the transmitted images include said bands.

8. (Original) The computer system of claim 1, wherein the biometric device is a fingerprint scanner configured to transmit images of fingerprints.

9. (Original) The computer system of claim 1, wherein the interface determines if one or more of the transmitted images include at least one straight line having at least a predetermined width across the image.

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10. (Original) The computer system of claim 1, wherein the interface processes a plurality of rows to determine a corresponding plurality of grayscale value histograms.

11. (Original) The computer system of claim 10, wherein the interface processes the plurality of grayscale value histograms to determine a corresponding plurality of modes for the grayscale value histograms.

12. (Original) The computer system of claim 11, wherein the interface determines if the plurality of modes indicate the existence of bands in the images by determining if the modes exhibit variations greater than a predetermined amount.

13. (Original) The computer system of claim 1, wherein the interface connects to an expansion slot, and wherein the computer system further comprises:

a system memory configured to store software;

a processor coupled to the system memory and configured to execute the software, wherein the processor is further coupled to the interface, wherein the software configures the processor to initiate operation of the interface and biometric device.

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14. (Original) The computer system of claim 13, wherein the processor is configured to receive a template from the interface, and wherein the processor is configured to compare the template to a stored template.

15. (Original) The computer system of claim 13, wherein the computer system further comprises:

a network interface coupled to a network login server, wherein the network login server is configured to receive a template from the interface, and wherein the network login server is configured to compare the template to a stored template.

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16. (Currently amended) A fingerprint verification method that comprises:
capturing a sequence plurality of fingerprint images; ~~and~~
~~comparing~~ determining if the fingerprint images; and
determining if the fingerprint images include non-stationary bands having
different positions.

17. (Original) The method of claim 16, wherein said bands are bands attributable to illumination changes.

18. (Original) The method of claim 16, wherein the determining is one of a plurality of security tests, and wherein the method further comprises:
creating a fingerprint template if the image passes the plurality of security tests.

19. (Original) The method of claim 18, wherein the creating includes:
extracting minutia information from the fingerprint image; and
converting the minutia information into the fingerprint template.

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20. (Original) The method of claim 19, wherein the plurality of security tests includes:

determining if minutia information from one fingerprint image matches minutia information from another fingerprint image.

21. (Original) The method of claim 16, wherein the capturing includes:
illuminating a window from a scanning side;
scanning light reflected back through the window in raster fashion.

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22. (Original) The method of claim 16, wherein the determining includes:
detecting at least one straight line spanning the image and having at least a predetermined width .

23. (Original) The method of claim 16, wherein the determining includes:
finding a grayscale value histogram mode for each row of the fingerprint image;
calculating a variance of the modes; and
determining that the fingerprint image includes bands if the variance exceeds a predetermined threshold.

24. (Original) The method of claim 18, wherein the plurality of tests includes:
and
extracting minutia information from a plurality of fingerprint images;
comparing the minutia information of the plurality of images to determine if at least a minimum amount of variation exists, and if not, aborting the creation of the fingerprint match template.

25. (Currently amended) A fingerprint verification system that comprises:
a capture means for capturing a fingerprint images; and
a processing means for ~~determining if the~~ comparing sequential fingerprint images and for determining if the sequential fingerprint images

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includes non-stationary bands attributable to condition changes during the capturing of the fingerprint images.

26. (Original) The system of claim 25, wherein said condition changes include illumination intensity changes.

27. (Currently amended) The system of claim 25, wherein if the processing means determines that the fingerprint images includes non-stationary bands, the processing means prevents creation of a fingerprint template from information in the fingerprint images.

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28. (Currently amended) A system, comprising:
a camera; and
a digital signal processor (DSP) coupled to the camera, wherein the DSP is configurable to capture a plurality of image frames from the camera and detect if a series of the plurality of image frames are duplicate image frames and wherein the DSP is further configurable to determine a most common grayscale value of pixels for each pixel line of an image and detect when at least one pixel line has a most common grayscale value below a predetermined threshold.

29. (Previously presented) The system of claim 28 wherein the plurality of image frames comprise fingerprint images.

30. (Previously presented) The system of claim 28 wherein the duplicate image frames exhibit less than a threshold amount of variation across the series of the plurality of image frames.

31. (Previously presented) The system of claim 28 wherein the DSP performs an action upon detecting duplicate image frames.

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32. (Previously presented) The system of claim 31 wherein the action comprises at least one action selected from the group consisting of aborting an image frame acquisition process and reporting a failure.

33. (Currently amended) The system of claim 28 wherein the DSP ~~is configurable to detect banded regions~~ are attributable to condition changes during capture of the successive in an image frames by the camera.

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34. (Previously presented) The system of claim 33 wherein the DSP detects banded regions in an image frame by detecting if more than a predetermined amount of grayscale variation exists.

35. (Previously presented) The system of claim 33 wherein the DSP detects banded regions in an image frame by detecting lines across the image frame, wherein the lines have at least a predetermined width.

36. (Previously presented) The system of claim 33 wherein the DSP performs an action if a banded region is detected.

37. (Previously presented) The system of claim 36 wherein the action comprises at least one action selected from the group consisting of aborting an image frame acquisition process and reporting a failure.

38. (New) A system, comprising:
a biometric device comprising a scanner that scans a series of images at a predetermined rate; and
a processor coupled to the biometric device;
wherein the processor is configured to compare subsequent images and determine if the subsequent images have greater than a predetermined amount of pattern changes; and

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wherein, if the subsequent images have greater than a threshold amount of pattern changes, the processor determines a most common grayscale pixel value for each pixel line to detect if image banding exists wherein the image banding is attributable to condition changes during a scanning process of each image.

39. (New) The system of claim 38 wherein if the processor does not determine that the subsequent images have greater than a predetermined amount of pattern changes, the processor asserts a signal indicating that a problem exists.

40. (New) The system of claim 38 wherein if the processor detects image banding, the processor asserts a signal indicating that a problem exists.
